

To: Brian Johnston

Date: December 22, 1980

From: Harry B. Stewart

Subject: 810 disk controller firmware

This memorandum discusses some of the pros and cons regarding the release of version E of the 810 disk controller firmware versus version C. Most of the technical information contained in this memo was obtained from Dave Staugas' report, dated 18 Nov 80.

PRO version E

1. Version E contains facilities for downloading user supplied code of up to 64 bytes, and then executing this code. This feature was added at the request of manufacturing to aid them in the testing of the disk units. Using this facility such things as the RAM, ROM, PIA and FD controller chips can be tested directly, as well as in the integrated operation of standard disk commands.
2. Version E contains facilities for obtaining more extensive controller status information than version C; again, this is useful for manufacturing.
3. Version E changes the motor timeout from 7 seconds to 3 seconds, which is an aid to the user when changing diskettes.
4. Version E does not turn on the motor as part of the power-up process, which speeds up the system startup process by not requiring the user to wait for the motor to timeout and stop before loading a diskette.
5. See also Dave Staugas' report for other items, which are either less relevant to the decision making process or are not easily summarized out of context.

CON version E

1. Version E will have to be thoroughly tested prior to its release, whereas version C, being a minor modification to version B, is essentially ready to release.
2. The downloadable controller code mentioned in PRO item 1 is a potentially dangerous feature. If disk copy protection is to be implemented primarily in the form of bad sectors on a master disk (with possible software checks on those bad sectors), then this feature now provides the user with the mechanism for writing bad sectors at will.

It is obvious that the naive user will not be able to take advantage of this feature, but the new threat is in a single individual or company marketing an ATARI DISK DUP UTILITY package which will duplicate any Atari disk. Such utility packages are currently available for Apple VisiCalc, TRS-80 cassette tapes and probably other software products.

Some protection against this feature being discovered and used is provided by not utilizing it in any user purchaseable

software; in other words, restrict its use to manufacturing testing. Then the potential pirate must obtain the relevant operating information by disassembling the controller ROM or from a security leak.

If disk protection is not a concern, or is to be provided primarily by non-hardware techniques, such as legal contracts or low pricing, this item may not be a major consideration.

cc: Rich Gregg
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